

**Listing of Claims:**

1-61. (Cancelled)

62. (New) A system for conducting a lateral flow assay to detect the presence or quantity of an analyte in a sample, the system comprising:

(a) a lateral flow membrane strip comprising a detection zone, wherein upon application, the sample is capable of traversing through the membrane strip to the detection zone; and

(b) a reading device comprising:

(i) a housing within which is contained an electromagnetic radiation source and a sensor capable of detecting the intensity of electromagnetic radiation, wherein the electromagnetic radiation source and sensor are positioned so that electromagnetic radiation emitted from the source is capable of being reflected from the lateral flow membrane strip to the sensor, the housing having an exterior surface;

(ii) a light barrier structure comprising a top plate and a bottom plate, the bottom plate being positioned adjacent to the exterior surface of the housing, wherein a receiving port is defined between the top plate and the bottom plate, the lateral flow membrane strip being capable of insertion into the receiving port, wherein the bottom plate defines a region through which electromagnetic radiation from the source is capable of passing before contacting the lateral flow membrane strip, the region having a size that approximates the size of the detection zone.

63. (New) The system of claim 62, further comprising a pressure plate that is positioned in the receiving port between the top plate and the bottom plate for bearing against the lateral flow membrane strip upon insertion.

64. (New) The system of claim 63, wherein the pressure plate is spring loaded.

65. (New) The system of claim 62, further comprising a light absorbing member positioned within the receiving port.

66. (New) The system of claim 65, wherein the light-absorbing member comprises a flexible material.

67. (New) The system of claim 65, wherein the lateral flow membrane strip is positioned between the light absorbing member and the electromagnetic radiation source when inserted into the receiving port.

68. (New) The system of claim 62, wherein the region is an aperture.

69. (New) The system of claim 62, wherein the receiving port defines a first stop position for a reference reading and a second stop position for a sample reading.

70. (New) The system of claim 69, wherein one or more of the stop positions is formed by notches in the bottom plate.

71. (New) The system of claim 62, wherein a capture reagent is immobilized within the detection zone, the capture reagent being configured to directly or indirectly bind to the analyte.

72. (New) The system of claim 62, wherein the region is elongated.

73. (New) The system of claim 62, wherein the region is circular.

74. (New) The system of claim 62, wherein the area of the region is 1.8 times or less than the area of the detection zone.

75. (New) The system of claim 62, wherein the area of the region is 1.3 times or less than the area of the detection zone.

76. (New) The system of claim 62, wherein the electromagnetic radiation source comprises a light emitting diode.

77. (New) The system of claim 62, wherein the sensor comprises a photodiode.

78. (New) The system of claim 62, further comprising a display for providing results of the assay.

79. (New) The system of claim 62, further comprising a sample pad in fluid communication with the membrane strip, the sample pad defining the point of application for the sample.

80. (New) The system of claim 62, further comprising a wicking pad in fluid communication with the membrane strip.

81. (New) The system of claim 62, wherein the electromagnetic radiation source, the sensor, or combinations thereof, are positioned within the housing.